AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act, as amended, (33 U.S.C. §§ 1251 et seq.; the "CWA"),

Monadnock Paper Mills, Inc.

is authorized to discharge from a facility located at

117 Antrim Road
Bennington, New Hampshire 03442

to receiving water named

Contoocook River (Hydrologic Code; 01070003)

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on the first day of the calendar month immediately following sixty days after signature.

This permit and the authorization to discharge expire at midnight, five (5) years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on October 23, 2000.

This permit consists of Part I, (12-pages), including effluent limitations and monitoring requirements; Attachment A (9-pages), WET testing requirements; and Part II (25-pages), including General Conditions and Definitions.

Signed this 10th day of July, 2007

/S/ SIGNATURE ON FILE

Stephen S. Perkins, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency
New England Region
Boston, Massachusetts

PART I.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting throug
date, the Permittee is authorized to discharge treated wastewater (p
from paper manufacturing process) from Outfall Serial Number 001 int
Contoocook River. Such discharges shall be limited and monitored by
as specified below. Samples taken in compliance with the monitoring
specified below shall be taken at Outfall 001 after the treatment sy
prior to discharge into the Contoocook River at a point that provide
representative analysis of the effluent.

Effluent Characteristic	Discharge Limitations		Moni
	Average Monthly	Maximum Daily	Measu Freq
Flow, MGD	1.0	1.3	Conti
BOD_5, lbs/day December 1 - March 31	400 lbs/day	500 lbs/day	1/W
BOD_5, lbs/day April 1 - November 30	300 lbs/day	400 lbs/day	1/W
TSS[2], lb/day	300 lbs/day	400 lbs/day	1/W
TSS[3], lb/day	315 lbs/day	420 lbs/day	1/W
Total Recoverable Aluminum, mg/l	0.83	5.5	2/M
pH[4,5]	Range: 6.5 - 8.0 (See PART I.D.1.a.)		1/

(Note: See page 5 - 7 for explanation of superscripts.)

PART I. (Continued)

Effluent Characteristic	Discharge Limitations	Monitoring Requirement	
Whole Effluent Toxicity		Measurement Frequency	Sample Type
LC50[6,7,8];in percent	≥100%	2/Year	24-Hour Composite
C-NOEC[7,8,9];in percent	Report	2/Year	24-Hour Composite
Ammonia Nitrogen as Nitrogen[10]; mg/l	Report	2/Year	24-Hour Composite
Hardness[10]; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Aluminum[10]; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Cadmium[10]; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Chromium[10]; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Copper[10]; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Nickel[10]; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Lead[10]; mg/l	Report	2/Year	24-Hour Composite
Total Recoverable Zinc[10]; mg/l	Report	2/Year	24-Hour Composite
Total Phosphorous[10]; mg/l	Report	2/Year	24-Hour Composite

(Note: See page 5 - 7 for explanation of superscripts.)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

2. During the period beginning on the effective date and lasting through expiration date, the Permittee is authorized to discharge treated wastewater (solutions used for well redevelopment) from Outfall Serial Number 002 into the Contoocook River. Such discharges shall be limited and monitored by the Permittee as specified below. Samples taken in compliance with the monitoring requirements specified below shall be taken from the sedimentation/neutralization tank prior to discharging the treated contents of that tank.

Effluent Characteristic	Discharge Limitations	Monitoring Requirements	
	Maximum	Measurement Frequency	Sample Type
Flow[11], GPD	225,600	As Required	Estimate
TSS, mg/l	50	Per Discharge[12]	Grab
pH[4,5]	Range: 6.5 - 8.0	Per Discharge[12]	Grab
Total Phosphorous, mg/l	Report	Per Discharge[12]	Grab
Total Residue Chlorine[13], mg/l	0.011	Per Discharge[12,13]	Grab
Turbidity, NTU	Report	Per Discharge[12]	Grab

(Note: See page 5 - 7 for explanation of superscripts.)

EXPLANATION OF SUPERSCRIPTS TO PART I.A.1. ON PAGE 2-3 AND PART I.A.2. ON PAGE 4.

(1) Effluent discharge shall be monitored by a continuous recording flow meter containing a totalizer at a location representative of actual discharge of Outfall 001.

(2) The applicable TSS limit when the paper production level at the facility is less than 105 tons/day (t/d) based on the presently installed paper making machinery. The No Discharge Code (NODI) is entered on the monthly Discharge Monitoring Report (DMR) when the production level averages or is more than 105 t/d and the alternate TSS limits in No. 3 apply.

(3) The applicable TSS limit when the paper production level at the facility is more than 105 t/d based on an upgrade of the facility's paper making machinery paper production capacity. The No Discharge Code (NODI) is entered on the monthly Discharge Monitoring Report (DMR) when the production level is less than or averages 105 t/d and the alternate TSS limits in No. 2 apply.

(4) Refer to Section I.D. for specific reporting requirements. The pH of the effluent shall not be less than 6.5 nor greater than 8.0 at any time, unless in compliance with conditions specified in PART I.D.1.(a).

(5) This is a State Certification requirement.

(6) LC50 is the concentration of wastewater (effluent) causing mortality to 50 percent (%) of the test organisms. The "100% limit" is defined as a sample which is composed of 100% effluent (See A.1 on Page 2 of Part 1 and Attachment A of Part 1). Therefore, a 100% or greater limit means that a sample of 100% effluent shall cause no greater than a 50% mortality rate in that effluent sample. The limit is considered to be a maximum daily limit.

(7) The Permittee shall conduct chronic (and modified acute) survival and reproduction WET tests on effluent samples using two species, Daphnid (Ceriodaphnia dubia) and Fathead Minnow (Pimephales promelas) following the protocol listed in Attachment A (Freshwater Chronic and Modified Acute Toxicity Test Procedure and Protocol dated December 1995). Toxicity test samples shall be collected and tests completed two (2) times per year during the calendar quarters ending March 31st and September 30th. Toxicity test results are to be submitted by the 15th day of the month following the end of the quarter tested.

(8) This permit shall be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements, including chemical specific limits, if the results

of the WET tests indicate the discharge exceeds any State water quality criterion. Results from these toxicity tests are considered "New Information" and the permit may be modified as provided in 40 CFR Section 122.62(a)(2).

(9) C-NOEC (Chronic-No Observed Effect Concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life-cycle or partial life-cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results (growth, survival, and/or reproduction) exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, report the lowest concentration where there is no observable effect. See Attachment A (VII. TOXICITY TEST DATA ANALYSIS) on page A-9 for additional clarification.

(10) For each WET test, the Permittee shall report on the appropriate Discharge Monitoring Report (DMR) the concentrations of Ammonia Nitrogen as Nitrogen, Hardness, and Total Recoverable Aluminum, Cadmium, Chromium, Copper, Lead, Nickel, Zinc and Total Phosphorous found in the 100 percent effluent sample. All these aforementioned chemical parameters shall be determined to at least the Minimum Quantification Level (MLs) shown in Attachment A on page A-8, or as amended. The Permittee should also note that all chemical parameter results must still be reported in the appropriate WET test toxicity report.

(11) Flow from the sedimentation/neutralization tank may be estimated by calculations or referencing pump curves.

(12) A sample shall be taken directly from the sedimentation/neutralization tank prior to discharging the treated contents of that tank. The tank's contents shall be well mixed before taking that sample.

(13) Total Residual Chlorine shall be measured using any one of the following three methods listed in a. through c.:

a. Standard Methods [18th or subsequent Edition(s) as approved in 40 CFR Part 136], No. 4500-Cl G.

b. Standard Methods [18th or subsequent Edition(s) as approved in 40 CFR Part 136], No. 4500-Cl F.

c. Standard Methods [18th or subsequent Edition(s) as approved in 40 CFR Part 136], No. 4500-Cl D

The limit at which compliance/noncompliance determinations for Total

Residual Chlorine (TRC) will be based, is the chemical Minimum Quantification Level (ML). For this permit the ML for Total Residual Chlorine is 0.020 mg/l (20.0 ug/l). This value may be reduced by permit modification as more sensitive test methods are approved by the EPA and the NHDES-WD. Any Total Residual Chlorine valve below 0.020 mg/l will be reported as zero (non-detect).

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Continued)

3. The discharges from Outfall 001 and 002 shall not cause the turbidity of the receiving water to exceed naturally occurring conditions by 10 Nephelometric Turbidity Units (NTU).

4. The Permittee shall conduct acute and chronic toxicity tests on effluent samples using two species, Daphnid (Ceriodaphnia dubia) and Fathead Minnow (Pimephales promelas) following the protocol in Attachment A (Freshwater Chronic Toxicity Test Procedure and Protocol dated December 1995). This test protocol includes the procedure to calculate an LC50 at the end of 48 hours for the two species.

   The Permittee may use alternate dilution water for the chronic toxicity tests with either two or three controls as provided below:

   (a) Initial toxicity tests using the receiving water as the control are or would be invalid because the receiving water shows toxicity.

   (b) If the alternate dilution water is a laboratory water that does not require an adjustment to simulate the water chemistry of the receiving water as described in this Part, then two controls are required (1. lab water and 2. site water).

   (c) If the alternate dilution water is a lab water that is adjusted to simulate the water chemistry of the receiving water as described in this Part, then three controls are required (1. alternate dilution water or the adjusted lab water, 2. lab water, and 3. site water).

   The alternate dilution water must be of a known quality with water quality characteristics such as organic carbon, total suspended solids, pH, specific conductivity, alkalinity and hardness similar to that of the Contoocook River. It is recommended that the Permittee screen the alternate dilution water for suitability prior to toxicity testing.

5. The discharge shall not cause a violation of the water quality standards of the receiving water.

6. The discharge shall be adequately treated to insure that the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum or other visible pollutants. It shall be adequately treated to insure that the surface waters remains free from pollutants which produce odor, color, taste or turbidity in the receiving waters which is not naturally occurring and would render the receiving water unsuitable for its designated uses.

7. The Permittee shall not discharge into the receiving water any pollutant or combination of pollutants in toxic amounts.

8. The Permittee shall not utilize nor discharge pentachlorophenol or trichlorophenol.

9. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:

   (a) That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

      (1) One hundred micrograms per liter (100 μg/l);

      (2) Two hundred micrograms per liter (200 μg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 μg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

      (3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or

      (4) Any other notification level established by the Director in accordance with 40 CFR §122.44(f) and New Hampshire regulations.

   (b) That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"

      (1) Five hundred micrograms per liter (500 μg/l);

      (2) One milligram per liter (1 mg/l) for antimony;

(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or

(4) Any other notification level established by the Director in accordance with 40 CFR §122.44(f) and New Hampshire regulations.

(c) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

10. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable standard or limitation promulgated or approved under sections 301(b)(2)(C) and (d), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

(a) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

(b) Controls any pollutants not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

11. All sediment shall be cleaned from the sedimentation/neutralization tank prior to filling that tank for further treatment of well redevelopment chemical solutions.

12. Well redevelopment shall not be conducted between the dates of October 1 - May 31.

13. Any discharge of the sedimentation/neutralization tank shall cause no erosion of the banks of the Contoocook River. The Permittee shall digitally photograph the banks of the Contoocook River where the discharge of the sedimentation/neutralization tank may enter the River. These photographs shall be taken prior to discharging the treated contents of that tank. If discharges from the sedimentation/neutralization tank enter the Contoocook River, the Permittee shall digitally photograph the River's bank at the point(s) of entry after the discharge flow has stopped. These photographs shall be submitted to EPA, Water Technical Unit, and NHDES in accordance with Part I.C.

B. SPECIAL LOW FLOW CONDITION

1. Permittee actions related to the withdraw of water (i.e temporary diversions of flow, permanent removal of water,

temporary storage of water) from the Contoocook River shall not reduce the flow in the Contoocook River to a flow less than the 7Q10 low flow value or further reduce flows already less than the 7Q10 low flow value. The 7Q10 low flow in the area of the facility is 16.5 cfs.

2. In response to Part I.B.1, the Permittee shall first verbally notify within 24-hours and then within 5-days detail by letter to the EPA, Water Technical Unit, and NHDES when the Contoocook River flow is less than 7Q10 as a result of the Permittee's actions and the days when there is no discharge from Outfall 001. If this event occurs for more than one day, a verbal report shall be made each day and the written report submitted after the occurrence has ended.

C. MONITORING AND REPORTING

Monitoring results obtained during the previous one month shall be summarized for each month and reported on separate Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the month following the completed reporting period. The first report is due on the 15th day of the month following the effective date of the permit.

Signed and Dated original DMRs and all other reports required herein or in Part II shall be submitted to the Director at the following address:

U.S. Environmental Protection Agency
Region 1
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114-8127

Duplicate signed copies of all reports and information required herein shall be submitted to the State at:

New Hampshire Department of Environmental Services
Water Division
Wastewater Engineering Bureau
29 Hazen Drive, P.O. Box 95
Concord, New Hampshire 03302-0095

All verbal reports or notifications shall be made to both EPA and NHDES.

D. STATE PERMIT CONDITIONS

1. The Permittee shall comply with the following conditions, which is included as State Certification requirements.

(a) The pH range of 6.5-8.0 Standard Units (S.U.) must be achieved in the final effluent unless the Permittee can demonstrate to NHDES-WD: (1) that the range should be widened due to naturally occurring conditions in the receiving water or (2) that the naturally occurring receiving water pH is not significantly altered by the Permittee's discharge. The scope of any demonstration project must receive prior approval from NHDES-WD. In no case, shall the above procedure result in pH limits less restrictive than 6.0-9.0 S.U.

(b) This NPDES Discharge Permit is issued by the EPA under Federal and State law. Upon final issuance by the EPA, the NHDES-WD may adopt this permit, including all terms and conditions, as a State permit pursuant to RSA 485-A:13. Each Agency shall have the independent right to enforce the terms and conditions of this Permit. Any modification, suspension or revocation of this Permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of the Permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation.

E. SPECIAL CONDITIONS

Whole Effluent Toxicity Test Frequency Adjustment

The Permittee may submit a written request to the EPA requesting a reduction in the frequency (to not less than once per year) of required toxicity testing, after completion of a minimum of four (4) successive toxicity tests of effluent, all of which must be valid tests and demonstrate compliance with the permit limit(s) for whole effluent toxicity. Until written notice is received by certified mail from the EPA indicating that the Whole Effluent Toxicity Testing requirement has been changed, the Permittee is required to continue testing at the frequency specified in the respective permit.

pH Limit Adjustment

The Permittee may submit a written request to the EPA requesting a change in the permitted pH limit range. The revised pH range, though, cannot be less restrictive than 6.0 to 8.0 Standard Units. The Permittee's written request must include the State's approval letter containing an original signature (no copies). The State's letter shall state that the Permittee has demonstrated to the State's satisfaction that as long as discharges to the receiving water from a specific outfall are within a specific numeric pH range the naturally occurring receiving water pH will be unaltered. That letter must specify for each outfall the associated numeric pH limit range. Until written notice is

received by certified mail from the EPA indicating the pH limit range has been changed, the Permittee is required to meet the permitted pH limit range in the respective permit.

F. REOPENER CLAUSE

This Permit maybe modified, or alternatively, revoked and reissued to reflect new information developed by the NHDES or EPA during a Total Maximum Daily Load (TMDL) Study of the Contoocook River evaluating the impact of the oxygen demanding pollutants and nutrients on the dissolved oxygen levels in this River.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
ONE CONGRESS STREET
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

NPDES PERMIT NO.: NH0000230

NAME AND ADDRESS OF APPLICANT:

Monadnock Paper Mills, Inc.
117 Antrim Road
Bennington, New Hampshire 03442

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Monadnock Paper Mills, Inc.
117 Antrim Road
Bennington, New Hampshire 03442

RECEIVING WATER: Contoocook River

CLASSIFICATION: B

SIC CODE: 2621

Table of Contents

I. Proposed Action, Type of Facility and Discharge Location.

The above named applicant has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its NPDES permit to discharge treated effluent into the designated receiving water (Contoocook River). The applicant owns and operates the above named non-integrated paper mill; i.e., does not have an on-site wood pulp mill. The mill produces a variety of base and coated papers from purchased pulp. Products produced include wallpaper, abrasive paper backing, medical packaging, graphic arts paper and schoolbook covers

The location of the facility, Outfall 001 and the receiving water are shown in Attachment A. A schematic of the facility's water and wastewater flow is shown in Attachment B.

Paper is produced on two paper machines and, when necessary, the paper is coated on one paper coater machine. Water removed from the paper slurry that enters the paper making machines is recirculated for reuse. Any excess recirculated water is sent to the wastewater treatment plant. Liquid additives applied during the paper making process are either barreled for reuse, or, if contaminated, are directed to the wastewater treatment plant. Attachment B, extracted from a Monadnock Paper Mills May 4, 1998 drawing, depicts facility’s process and wastewater flows for a typical operating day. The wastewater flow averaging 0.684 millions gallons per day (MGD) is shown on Attachment B. Monadnock Paper Mills NPDES application and the most recent five years of flow data, however, presents average flows of 0.473 MGD and 0.489 MGD, respectively.

The wastewater treatment plant receives the following wastewater

streams: excess process water from the paper making process, contaminated saturant from the paper making process and contaminated coatings from the paper coater process, cooling water/mechanical seal water, sand filter backwash water, boiler blowdown, and tank and machine wash water. Storm water from some roof drains is directed to the wetwell. These wastewater streams flow past two bar racks into a wet well. Sodium hydroxide may be added at the wet well to adjust the pH to neutral in the clarifier. The wastewater is then pumped from the wet well to a clarifier. During transfer of the wastewater from the wet well to the clarifier two polymers (a cationic coagulant and an anionic coagulant) are added to enhance the settling of suspended short paper fibers. The settled short paper fibers are then pumped to a dewatering press. The water from the press is returned to the wastewater treatment system via the wetwell, and the solids are recycled offsite. After treatment in the clarifier, the cleared wastewater sequentially flows through four lagoons, the first three being aerated, for secondary treatment. Phosphoric acid is used as a nutrient for bacteria in the treatment system only during the colder months (mid-September to March). After the leaving the lagoons the treated wastewater discharges to the Contoocook River through Outfall 001.

During this permit cycle NHDES began a Total Maximum Daily Load (TMDL) study of the Contoocook River. The section of the Contoocook River which Monadnock Paper Mills discharges into is encompassed by that study. In preparation of the TMDL study, low flow data for the Contoocook River was reassessed resulting in a revised 7Q10. (The 7Q10 represents the lowest average flow which occurs for seven consecutive days on an annual basis with a recurrence interval of once in ten years on average.) The 7Q10 is applied in calculating certain pollutant effluent limits. The 7Q10 low flow for the receiving water at this facility was recalculated to be 16.5 cubic feet per second (cfs). The previous 7Q10 was 19.2 cfs.

The mill’s process water is predominately obtained from Monadnock Paper Mills’ ground water well. A small amount of water also is drawn from the Town of Bennington. Process water can also be taken from the Contoocook River. The intake on the Contoocook River is activated: 1) in July for a few days during the mill’s shutdown when the intake flow rate is reduced from an average flow of approximately 0.48 MGD to about 0.18 MGD; and, 2) in an emergency situation which precludes use of the well water. Emergency use of Contoocook River water is limited to less than a day. The River water’s quality is unsuitable in the production of the medical grade paper.

Each year Monadnock Paper Mills rehabilitates two groundwater wells. These wells supply the water used in the Mills’ paper making processes. The rehabilitation, also referred to as

redevelopment, involves chemically treating the well with solutions containing acids and phosphorous, and biocides. In previous years, Monadnock Paper Mills was issued an EPA-New England NPDES permit waiver for the rehabilitation discharge. A NHDES Temporary Surface Water Discharge Permit regulated the redevelopments solutions' discharge. In 2005, the EPA and NHDES issued a Remediation General Permit (RGP). The RGP was designed to regulate the most common surface water discharges found at contaminated groundwater remediation sites, contaminated construction dewatering and discharges that contain petroleum products, solvents and metals. The RGP was intended to be used at remediation sites.

The RGP eliminated the need for sites that were temporarily discharging water to apply for an EPA-New England NPDES permit exclusion and a NHDES Temporary Surface Water Discharge Permit. Since Monadnock's well redevelopment is not at a contaminated or formerly contaminated site, however, Monadnock cannot apply for the RGP. Monadnock's well development discharges now require an individual NPDES permit. A new outfall, Outfall 002, was established for Monadnock Paper Mills' well rehabilitation treated wastewater discharge.

Monadnock Paper Mills, Inc. existing permit was issued on October 23, 2000, and expired on December 22, 2005. The expired permit (hereafter referred to as the "existing permit") has been administratively extended as the applicant filed a complete application for permit reissuance within the prescribed time period as per 40 Code of Federal Regulations (C.F.R.) § 122.6. The existing permit authorizes discharge from Outfall 001.

II. Description of Discharge.

A quantitative description of those effluent parameters limited and monitored in the existing permit for the 62-month period January 2001 through February 2006 is presented in Attachment C. The data was compiled from monthly Discharge Monitoring Reports (DMR) submitted by the facility to the New Hampshire Department of Environmental Services, Water Division (NHDES-WD) and the EPA. The paper mill's wastewater treatment system average flow over this time period is 0.489 MGD, with a maximum daily flow of 0.84 MGD. The wastewater from the paper making process is discharged through Outfall 001 to the Contoocook River. The permittee submitted quantitative data with their reapplication submissions (FORMs 1 and 2C) along with the DMR data; all which are on file at the EPA Boston office. This effluent data is statistically compared to the permit's effluent limits to ensure the permittee is effectively meeting the permit's limits. The draft permit contains Outfall 001 limits for pH, Five Day Biochemical Oxygen Demand (BOD_5), Total Suspended Solids (TSS), Total Recoverable Aluminum (TRA) and a requirement for a Whole Effluent Toxicity

(WET) Test and monitoring for Total Phosphorous (TP).

Each year Monadnock Paper Mills rehabilitates two groundwater wells. These wells supply the water used in the Mills' paper making processes. The rehabilitation includes three chemical treatments. The wastewater from this process is treated in a sedimentation/neutralization tank. The draft permit contains a new outfall, Outfall 002, with limits for pH and TSS; plus monitoring for TP, Total Recoverable Chlorine (TRC) and Turbidity.

III. Limitations and Conditions

Effluent limitations and monitoring requirements are found in PART I of the Draft Permit. The basis for each limit and condition is discussed in sections IV.D through IV.H of this Fact Sheet.

IV. Permit Basis and Explanation of Effluent Limitations Derivation

A. General Statutory and Regulatory Background

Congress enacted the Clean Water Act ("CWA" or "Act"), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specified permitting sections of the Act, one of which is Section 402. See CWA §§ 301(a), 402(a). Section 402 establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System or NPDES. Under this section of the Act, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. See CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA § 402(a)(1),(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. See CWA §§ 301, 303, 304(b); 40 C.F.R. Parts 122, 125 and 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant-reducing technology available and economically achievable for the type of facility being permitted. See CWA § 301(b). EPA established minimum technology requirements for the pulp and paper industry in the form of effluent guidelines promulgated under 40 C.F.R. § 430. These guidelines specify the maximum mass (lbs per day) of Biochemical Oxygen Demand (BOD) and

Total Suspended Solids (TSS) which can be discharged per mass (tons per day) of product produced. The maximum amount of BOD and TSS allowed varies for the different types of pulp and paper products as well as manufacturing methods.

Water quality-based effluent limits, on the other hand, are designed to ensure that state water quality standards are met regardless of the decision made with respect to technology and economics in establishing technology-based limitations. In particular, Section 301(b)(1)(C) requires achievement of, "any more stringent limitation, including those necessary to meet water quality standards...established pursuant to any State law or regulation..." See 40 C.F.R. §§ 122.4(d), 122.44(d)(1) (providing that a permit must contain effluent limits as necessary to protect state water quality standards, "including State narrative criteria for water quality") (emphasis added) and 122.44(d)(5) (providing in part that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA).

The CWA requires that states develop water quality standards for all water bodies within the state. CWA § 303. These standards have three parts: (1) one or more "designated uses" for each water body or water body segment in the state; (2) water quality "criteria," consisting of numerical concentration levels and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) an antidegradation provision, focused on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. CWA § 303(c)(2)(A); 40 C.F.R. § 131.12. The limits and conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards.

The applicable New Hampshire water quality standards can be found in Surface Water Quality Regulations, Chapter Env-Ws 1700 et seq. See generally, Title L, Water Management and Protection, Chapter 485-A, Water Pollution and Waste Disposal Section. Hereinafter, New Hampshire's Surface Water Quality Regulations are referred to as the NH Standards.

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from the state's water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable in stream pollutant concentrations. Acute aquatic life criteria are generally implemented through maximum daily limits and chronic aquatic life criteria are generally implemented through average monthly limits. Where a State has not established a numeric

water quality criterion for a specific chemical pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use"; on a "case-by-case basis" using CWA Section 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, in certain circumstances, based on an "indicator parameter." 40 C.F.R. § 122.44(d)(1)(vi)(A-C).

All statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired. When technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. See 40 C.F.R. § 125.3(a)(1). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES permit. The regulations governing EPA's NPDES permit program are generally found in 40 C.F.R. Parts 122, 124, 125 and 136.

B. Development of Water Quality-based Limits

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality standard, including narrative water quality criteria. 40 C.F.R. § 122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

Reasonable Potential

In determining reasonable potential, EPA considers: (1) existing controls on point and nonpoint sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit application, monthly DMRs and State and Federal water quality reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in ***Technical Support Document for Water Quality-based Toxics Controls,*** March 1991, EPA/505/2-90-001 in Section 3; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire regulations (RSA 485-A:8,VI, Env-Ws 1705.02), available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life and human health criteria for non-carcinogens, or the long-

term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the outfall. Furthermore, 10 percent (%) of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Ws 1705.01.

Anti-Backsliding

Section 402(o) of the CWA generally provides that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. EPA has also promulgated anti-backsliding regulations, which are found at 40 C.F.R. § 122.44(l). Unless applicable anti-backsliding requirements are met, the limits and conditions in the reissued permit must be at least as stringent as those in the previous permit.

State Certification

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency stating that the permit will comply with all applicable federal effluent limitations and state water quality standards. See CWA § 401(a)(1). The regulatory provisions pertaining to state certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. 40 C.F.R. § 124.53(a). The regulations further provide that, "when certification is required....no final permit shall be issued...unless the final permit incorporates the requirements specified in the certification under § 124.53(e)." 40 C.F.R. § 124.55(a)(2). Section 124.53(e) in turn provides that the State certification shall include "any conditions more stringent than those in the draft permit which the State finds necessary" to assure compliance with, among other things, state water quality standards, See 40 C.F.R. § 124.53(e)(2), and shall also include, "[a] statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law, including water quality standards," 40 C.F.R.§ 124.53(e)(3).

However, when EPA reasonably believes that a state water quality standard requires a more stringent permit limitation than that reflected in a state certification, it has an independent duty under CWA § 301(b)(1)(C) to include more stringent permit limitations. See 40 C.F.R. §§ 122.44(d)(1) and (5). It should be noted that under CWA § 401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by state law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 C.F.R. § 124.55(c). In such an instance, the

regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." Id. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. § 122.4(d) and 40 C.F.R. § 122.44(d).

C. Development of Water Quality Based Effluent Limitations Specific to the Contoocook River

Section 303(d) of the CWA requires states to identify waters within their boundaries for which technology-based effluent limitations are insufficiently stringent to implement applicable water quality standards. States are required to prepare Total Maximum Daily Load (TMDL) analyses for receiving waters listed on the 303(d) list. A TMDL is a scientific analysis which identifies the amount of a pollutant from point, nonpoint and background sources that may be discharged to water quality-limited receiving water. Any pollutant loading above the TMDL will result in violation of the applicable water quality standards.

The State of New Hampshire's 2004 303(d) list of impaired waters identifies surface waters which do not currently meet state water quality standards (NHDES 2004). Segments of the Contoocook River have been identified as violating water quality standards for percent Dissolved Oxygen (DO) saturation, aluminum, pH, and *Escherichia coli*. The impaired segment of the Contoocook River into which the Monadnock Paper Mills' discharge is labeled NHRIV700030108-15 on the State's 2005 303d list. That segment is impaired because of low DO levels. The NHDES-WD has initiated, but not yet completed a TMDL for the reaches of the Contoocook River in the vicinity of Monadnock's effluent discharge.

In the absence of a TMDL, EPA is required to use available information to establish water quality-based limits when issuing NPDES permits for discharges to impaired waters. See generally, 40 C.F.R. § 122.44 (d). EPA has reviewed data collected, applicable narrative state water quality standards, federal water quality criteria guidance and other relevant information. At this time, EPA believes that the draft permit limits for BOD_5 are sufficiently stringent to satisfy water-quality standards. This is discussed in greater detail below.

While the permit will be issued for the normal five year term, it can be reopened and modified during its term under certain circumstances. A permit may be modified or revoked and reissued in accordance with 40 C.F.R. § 122.62(a) (Causes for modification) or (b) (Causes for modification or revocation and reissuance). One basis for reopening and modifying the permit during its term is the receipt of information that was not available at the time of permit issuance and that would have justified application of different permit conditions ("New

Information"). See 40 C.F.R. §122.62(a)(2). New Information may include, but is not limited to, an applicable final Total Maximum Daily Load ("TMDL"); other relevant water quality data or studies provided by any party; and the results of ESA Section 7 consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service. In addition to constituting New Information, the outcome of the ESA Section 7 consultation may also satisfy the requirements of 40 C.F.R. §122.62(b)(1). A reopener provision reflecting the foregoing has been added to the permit.

Any modified permit resulting from the reopener must be consistent with applicable anti-backsliding provisions. See e.g., CWA §§ 402(o)(1), 303(d)(4)(A)(i), 402(o)(2)(B) (and final paragraph) and 40 C.F.R. § 122.44(l).

D. Conventional Pollutants

Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS)

In Section IV.A. of this Fact Sheet it was explained the EPA established minimum technology requirements for the pulp and paper industry in the form of effluent guidelines promulgated under 40 C.F.R. § 430. These guidelines specify the maximum mass (lbs per day) of Five Day Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS) that can be discharged per mass (tons per day) of product produced.

However, none of the effluent guidelines found in 40 C.F.R. § 430 can be directly applied to the Monadnock Paper Mills. There are no effluent guidelines for a nonintegrated paper mill producing coated specialty papers. In the absence of effluent guidelines (or if applicable effluent guidelines do not regulate a pollutant of concern), EPA is authorized to establish technology-based permit limits on a case-by-case basis using Best Professional Judgment (BPJ).

That first NPDES permit containing the BOD_5 and TSS limits was issued on July 13, 1973. This permit contained "tiered" permit limits. The first tier limited BOD_5 to 1100 pounds per day maximum and 750 pounds per day on an average monthly basis, while TSS was limited to 6000 pounds per day maximum and 4030 pounds per day on an average monthly basis. The second tier reduced the BOD_5 permit limits to 350 pounds per day maximum and 235 pounds per day on an average monthly basis. TSS permit limits were reduced in the second tier to 470 pounds per day maximum and 315 pounds per day on an average monthly basis. Both the first tier and second tier permit limits were based on a production level of 78.1 tons of paper per day (t/d). However, the lower, second tier permit limits were based on the construction and operation of a wastewater treatment plant at the facility by June 30, 1975.

Therefore, the second tier permit limits were technology-based limits developed using EPA's BPJ authority.

In the late 1970's the New Hampshire Water Supply and Pollution Control Commission (NH WS&PCC), the predecessor of the NHDES-WD, evaluated the BPJ determination that set the BOD_5 and TSS limits for the Monadnock Paper Mills. That evaluation by the NH WS&PCC was contained in Staff Report No. 98 titled, ***WATER QUALITY STUDY & LOAD ALLOCATION, Contoocook River, Bennington to West Henniker***, which was issued in December 1978. The study stated that, "... Monadnock Paper Mills was in full compliance with all its NPDES effluent limits." Therefore, the technology-based permit BOD_5 limit, effective June 30, 1975, was deemed to be sufficient to protect the water-quality of the Contoocook River, since it was lower than the 500 lbs/day "protective level" cited in the report.

Over the next several permit issuance cycles (1988, 1993, and 2000), both the BOD_5 and TSS levels were adjusted based on varying production levels and the season (summer versus winter). At no time were the permitted BOD_5 level allowed to exceed the water-quality based "protective level" of 500 pounds per day.

Accordingly, the existing average monthly and maximum daily limits for BOD_5 and TSS are continued in the draft permit according to the antibacksliding requirements. See 40 C.F.R. §§ 122.44(l)(1) and (2).

Tiered Permit Limits

Monadnock Paper Mills states in their NPDES reapplication that based on the slump in world pulp and paper sales that Monadnock Paper has cancelled several machine upgrades. The TSS limits in the existing permit are based on two paper production levels. The present TSS limits are based on the Monadnock Paper Mills current paper making machinery, which has an average production capacity of 105 tons/day (t/d). The higher TSS limits would be applied if Monadnock Paper Mills upgraded their paper making machinery, raising daily paper production above 105 t/d.

Although Monadnock Paper Mills did not install any machine upgrades during the term of the present permit, the tiered TSS have been maintained in the draft permit. Maintaining the tiered TSS limits would allow Monadnock Paper Mills to install machinery upgrades at a future date, without having to accomplish an antidegradation study.

pH

The pH limits in the draft permit remain unchanged from the existing permit, however, language has been added to the State Permit Conditions (PART I.D.1.a.) allowing for a change in pH

limit(s) under certain conditions. A change would be considered if the applicant can demonstrate to the satisfaction of NHDES-WD that the in-stream pH standard will be protected when the discharge is outside the permitted range, then the applicant or NHDES-WD may request (in writing) that the permit limits be modified by EPA to incorporate the results of the demonstration.

Anticipating the situation where NHDES-WD grants a formal approval changing the pH limit(s) to outside the 6.5 to 8.0 Standard Units (S.U.) range, EPA has added a provision to this draft permit (See SPECIAL CONDITIONS section). That provision will allow EPA to modify the pH limit(s) using a certified letter approach. This change will be allowed as long as it can be demonstrated that the revised pH limit range does not alter the naturally occurring receiving water pH. Reference Part I.D.1.a. STATE PERMIT CONDITIONS in the draft permit.

E. Non-Conventional and Toxic Pollutants

Water-quality based limits for specific toxic pollutants such as chlorine, ammonia, etc. are determined from numeric chemical specific criteria derived from extensive scientific studies. The EPA has summarized and published specific toxic pollutants and their associated toxicity criteria in Quality Criteria for Water, 1986, EPA 440/5-86-001 as amended, commonly known as the federal "Gold Book". Each criteria consists of two values; an acute aquatic-life criteria to protect against short-term effects, such as death, and a chronic aquatic-life criteria to protect against long-term effects, such as poor reproduction or impaired growth. New Hampshire adopted these "Gold Book" criteria, with certain exceptions and included them as part of the States Water Quality Regulations promulgated on December 3, 1999. EPA uses these pollutant specific criteria along with available dilution in the receiving water to determine a specific pollutant's draft permit limit. Available dilution is discussed in the next subheading.

Available Dilution

As discussed in Section I, the NHDES during this permit cycle began a Total Maximum Daily Load (TMDL) study of the Contoocook River. The section of the Contoocook River which Monadnock Paper discharges into is encompassed by that study. In preparation of the TMDL study, low flow data for the Contoocook River was reassessed resulting in a revised 7Q10. The 7Q10 low flow for the receiving water at this facility was recalculated to be 16.5 cfs. The previous 7Q10 was 19.2 cfs.

The available dilution (also referred to as dilution factor) in the Contoocook River for the process wastewater discharge (Outfall 001) was calculated as 9.6 for the chronic dilution factor and 7.4 for the acute dilution factor. See Attachment D

for calculation of the available dilution. The chronic available dilution is based on the facility's permitted average monthly flow of 1.0 MGD (1.547 cfs), a 7Q10 low flow at Outfall 001 of 16.5 cfs, and a State of New Hampshire prescribed minimum 10% set aside for reserve. The acute available dilution is based on the facility's permitted maximum daily flow of 1.3 MGD (2.01 cfs), a 7Q10 low flow at Outfall 001 of 16.5 cfs, and a State of New Hampshire prescribed minimum 10% set aside for reserve. See 40 C.F.R. § 122.45(b)(2)(i). The State of New Hampshire has reserved ten percent assimilative capacity of surface water for future needs. See NH Env-Ws 1705.01.

Total Recoverable Aluminum (TRA)

The existing permit contains an average monthly Total Recoverable Aluminum (TRA) limitation at 0.97 mg/l. Based on a recalculated 7Q10, a revised TRA average monthly limit is required. The revised average monthly TRA limit is 0.83 mg/l. As mentioned, the recalculated 7Q10 is a result of the TMDL survey presently being conducted for the Contoocook River. See Attachment D for the dilution Factor calculation.

A maximum daily limit has also been added to the draft permit. A maximum daily limit is additionally referred to as an acute limit, and was calculated to be 5.5 mg/l. This limit is in accordance with 40 C.F.R. § 122.45(d)(1). This regulation requires that for continuous discharges there shall be both maximum daily and average monthly effluent limitations. Since Monadnock Paper Mills' lagoon system continuously discharges to the Contoocook River, a TRA maximum daily limit has been added to the draft permit.

The EPA considered eliminating the TRA limit from the draft permit. Eliminating the TRA limit was considered because the mean of the average monthly concentration was notably lower than the TRA average monthly limit. The mean value for the average monthly TRA concentration in Monadnock Paper Mills' 62-month set of effluent data is 0.29 mg/l, with a standard deviation for that data set of is 0.18.

An evaluation was performed on the TRA data set to assess whether a reasonable potential existed for TRA concentration in the Monadnock Paper Mills' effluent to exceed the average monthly (chronic) limit. A statistical analysis was conducted on the TRA data set using the method presented in ***Technical Support Document for Water Quality-based Toxics Controls,*** March 1991, EPA/505/2-90-001, Section 3.3.2

The statistical approach has two parts. The first is a characterization of the highest measured effluent concentration based on the desired confidence level. The relationship that

describes this is:

$$p_n = (1 - \text{confidence level})^{1/n} \qquad \text{(Equation. 1)}$$

where p_n is the percentile represented by the highest concentration in the data and n is the number of samples.

The second part of the statistical approach is a relationship between the percentile described above and the selected upper bound of the lognormal effluent distribution. For example, if five samples were collected (which represents the 40th percentile), the coefficient of variation is 0.6, and the desired upper bound of the effluent distribution is the 99th percentile, then the two percentiles can be related using the coefficient of variation (CV):

$$\frac{c_{99}}{c_{40}} = \frac{\exp\left(2.326\sigma - 0.5\sigma^2\right)}{\exp\left(-0.258\sigma - 0.5\sigma^2\right)} = 4.2 \qquad \text{(Equation. 2)}$$

where $\sigma^2 = \ln (CV^2 + 1)$ and 2.326 and -0.258 are the normal distribution values for the 99th and 40th percentiles. The CV is the ratio of the standard deviation to the mean. The resulting value is then multiplied to the highest data value to estimate the maximum expected concentration, and this value is then compared to the water quality standard (which has been adjusted for dilution factor).

There are 62 data points for Monadnock Paper Mills. Using Equation 1:

$$p_n = (1 - \text{confidence level})^{1/n}$$

$$p_{62} = (1 - 0.99)^{1/62}$$

$$p_{62} = 0.9285$$

Next, to calculate a value for CV and σ^2, the Monadnock data were used.

$$CV = \text{standard deviation} \div \text{mean} = 0.176 \div 0.292 = 0.60$$

$$\text{Then } \sigma^2 = \ln ((0.60)^2 + 1) = 0.3075 \text{ and}$$

$$\sigma = 0.5545$$

Next, using Equation 2 and look-up values for $z_{.93}$ (equals 1.478) from the Cumulative Probability Function for the Standard Normal Distribution:

$$\frac{c_{99}}{c_{93}} = \frac{\exp\left(2.326(0.5545) - 0.5(0.5545)^2\right)}{\exp\left(1.478(0.5545) - 0.5(0.5545)^2\right)} = \frac{\exp(1.136)}{\exp(0.6659)} = 1.60$$

Therefore, the maximum aluminum concentration in Monadnock's data was multiplied by 1.60 and compared to the water quality standard. The highest data point for Aluminum was 0.8 mg/L, so the resulting value was 1.22 mg/L. The chronic water quality criterion for aluminum is 0.087 mg/L. Accounting for dilution of 9.58, the chronic water quality criteria for aluminum is 0.087 x 9.58, or 0.833. Since 1.22 is greater than 0.833, there is reasonable potential for aluminum to exceed the chronic water quality standard.

Total Phosphorous

Phosphorous promotes the growth of nuisance algae and rooted aquatic Plants. Elevated levels of phosphorous can cause excessive algae and/or plant growth resulting in reduced water clarity and poor aesthetic quality. Through respiration, and the decomposition of plant matter, excessive algae and plant growth can reduce in-stream oxygen concentrations to levels that could adversely impact aquatic life and produce strong odors. There are areas of the reach of the Contoocook River into which Monadnock Paper Mills discharges indicate sag, or decrease, in the River's dissolved oxygen levels.

The NHDES has scheduled a TMDL study for the portion on the Contoocook River that flows through the towns of Bennington and Antrim, New Hampshire. Presently, NHDES has not announced when that TMDL will be completed. There is a possibility when that TMDL is issued that phosphorous limits will be imposed on the discharges to this section of the Contoocook River.

The wastewater stream of a paper manufacture is typically nutrient deficient. This means the bacteria, which are used to biologically treat the wastewater in the treatment systems lagoons, might not have sufficient nutrients to sustain their population. Monadnock Paper Mills, to enhance biological treatment, adds phosphoric acid to the aeration lagoons. The facility also periodically monitors the level of phosphorous in the lagoon system to ensure there is no excess loading of phosphorous. Currently there is insufficient information and data to determine that phosphorous contained in the Mills' effluent causes or contributes to the Contoocook River's impairment. EPA and NHDES-WD are not requiring a phosphorus limit for the Monadnock Paper Mills in the draft permit; however, the draft permit has added a bi-monthly monitoring of phosphorus levels in the facility's effluent.

EPA and NHDES have added a monitoring requirement for Total Phosphorous in the draft permit. The reporting of Total

Phosphorous will provide a historical record of the level of phosphorous discharged to the Contoocook River by Monadnock Paper Mills. In the future, the EPA will use this data to determine if phosphorous discharged in the facility's effluent actually contribute to the impairment of the Contoocook River. Requiring this type of monitoring is allowed under 40 C.F.R. § 124.44(d)(1)(ii).

Biocides

The draft permit continues the requirement of prohibiting the use or discharge of pentachlorophenol or trichlorophenol that are contained in the present permit, thus complying antibacksliding provisions in 40 C.F.R. § 122.44(l)(2).

F. Other Limits and Requirements

Flow

The requirement to report the existing average monthly and maximum daily flow limits are continued in the draft permit.

Special Low Flow Condition

The existing permit contained a requirement in Section B.1. that Monadnock Paper Mills maintain a minimum flow of 70 cfs, as measured immediately below the tailrace of the Paper Mill Dam or the inflow to the project, whichever is less. The "project" in this case refers collectively to the four Monadnock Paper Mills' dams that are used to generate hydro-electrical power. The basis for the above minimum flow release requirement to the Contoocook River is the Federal Energy Regulatory Commission (FERC) License Project No. 6597 issued for the Monadnock Hydroelectric Project (Project) to Monadnock Paper Mills, Inc. on August 27, 1984 as corrected on November 23, 1984. By specifying, the immediate minimum Contoocook River flow measured at the Mills' tailrace the FERC license prescribed the minimum flow requirements of the four upstream dams from Monadnock Paper Mills. Monadnock Paper Mills, by opening or closing gates at the Powder Mill Dam, matches outflow of the Powder Mill Dam tailrace with the inflow of that dam's impoundment. The FERC license also contains a requirement in Article 26 that Monadnock Paper Mills maintain the "... discharge from each of the other three developments (Powder Mill, Monadnock, and Pierce) a continuous minimum flow of 13 cfs or inflow to the developments, whichever is less, ..." This minimum flow, over each dam, is to be maintained to protect the aquatic resources of the project area. The 13 cfs does not represent the minimum flow of the Contoocook River. See Attachment E.

The EPA and NHDES-WD have eliminated these minimum flow requirements from the draft permit because in the Monadnock Paper Mills case, flow regulation is the responsibility of FERC. FERC

is responsible to direct what minimum flows the Mills shall maintain because Monadnock Paper Mills owns and operates these four dams on the Contoocook River in order to produce hydroelectric power for the facility.

The existing permit also contains another requirement in Section B.1. that Monadnock Paper Mills " … shall maintain the opening in the waste gate at the High Gate (Paper Mill) Dam to maintain the 7Q10 flow of 19.2 cfs whenever possible or the inflow to this Project, whatever value is less." Thus, the situation now exists that one regulatory agency, the EPA, is requiring Monadnock Paper Mills to maintain a minimum flow (19.2 cfs) which is higher than the minimum flow (13 cfs) that was required by another regulatory agency, FERC. Monadnock Paper Mills could be in violation of their NPDES permit by not maintaining a flow of 19.2 cfs through their dam complex, but not be in violation of their FERC license if the flow was maintained at 13 cfs. The EPA, therefore, has dropped the requirement for Monadnock Paper Mills to maintain a minimum flow equal to the Contoocook River's 7Q10 flow. This eliminates the situation where two federal agencies permit requirements are in conflict.

The existing permit further contains a requirement that Monadnock Paper Mills cease discharge of wastewater to the Contoocook River when water removal by the Mills lowers the flow of the River below the river's 7Q10. Although the likelihood is small that the Mills operations would lower the Contoocook River's flow below the River's 7Q10, the draft permit maintains the requirement for Monadnock Paper Mills to cease discharge of wastewater if the Mills' operations cause the Contoocook River's flow below the 7Q10. As previously explained, the 7Q10 low flow was recalculated as 16.5 cfs from 19.2 cfs by the NHDES for an ongoing TMDL study. The 7Q10, then, that triggers the cessation of wastewater flow has been changed to 16.4 cfs from 19.2 cfs.

Reopener Clause

A reopener clause was included in the draft permit. The permit can be modified if the need is demonstrated by any future analysis of the allowable loadings of the oxygen demanding pollutants and nutrients. This includes possible results of the on-going TMDL study.

Whole Effluent Toxicity

EPA's Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges

from entering the nation's waterways. EPA-New England adopted

this "integrated strategy" on July 1, 1991, for use in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant specific approaches such as those in the Gold Book and State regulations address individual chemicals, whereas, whole effluent toxicity (WET) approaches evaluate interactions between pollutants thus rendering an "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "Additive" and/or "Antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts and New Hampshire law states that, "all waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life;...." (N.H. RSA 485-A:8, VI and the N.H. Code of Administrative Rules, PART Env-Ws 1703.21(a)). The federal NPDES regulations at 40 C.F.R. (122.44(d)(1)(v) require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criterion for toxicity.

Where EPA-New England believes toxicity testing and limits are appropriate and necessary as described in the previous paragraph, the type of toxicity testing (acute and/or chronic) and the effluent limitation (LC50 and/or C-NOEC) are established based on the available dilution. The LC50 is defined as the concentration of toxicant, or in this draft permit as percentage of effluent, that would be lethal to 50% of the test organisms during a specific time period. The C-NOEC (Chronic-No Observed Effect Concentration) is defined as the highest concentration effluent to which organisms are exposed in a life cycle or partial life cycle test, which causes no adverse effect on growth, survival or reproduction where the test results (growth, survival and/or reproduction) exhibit a linear dose-response relationship. In those instances where these test results do not exhibit a linear dose-response relationship, the permittee is required to report the lowest concentration where there is no observable effect.

The toxicity testing results are summarized in Attachment C for the period March 2001 to September 2005. There was one indication of chronic toxicity, a C-NOEC of 25 percent, for Pimephales promelas species in the September 2001 test results.

In accordance with the antibacksliding provisions in 40 C.F.R. § 122.44(l)(2) this draft permit continues the WET testing requirement with two acute and chronic toxicity tests each year with two species and maintains the LC50 and C-NOEC limits. The

draft permit contains an LC50 limit of 100% effluent concentration and a C-NOEC reporting requirement. The two tests are to be performed on a semi-annual basis using the species Daphnid (Ceriodaphnia dubia) and Fathead Minnow (Pimephales promelas). Further details on the dilution water for these two species are provided below.

The semiannual sampling for the WET test requirement shall be collected and tests completed during the calendar quarters ending March 31st and September 30th of each year. Results are to be submitted to EPA and the NHDES-WD by the 15th day of the month following the end of the quarter sampled; that is April 15th and October 15th, respectively.

If toxicity is found, though, monitoring frequency and testing requirements may be increased. The permit may also be modified, or alternatively, revoked and reissued to incorporate additional toxicity testing requirements or chemical specific limits. These actions will occur if the Regional Administrator determines the NH Standards are not adequately enforced and users of the waterways are not adequately protected during the remaining life of the permit. Results of these toxicity tests are considered "new information not available at permit development"; therefore, the permitting authority is allowed to use said information to modify an issued permit under authority in 40 C.F.R. § 122.62(a)(2).

As a special condition of this draft permit (See applicable paragraph under SPECIAL CONDITIONS section), the frequency of testing may be reduced by a certified letter from EPA. This permit provision anticipates that the permittee may wish to request a reduction in WET testing. After completion of a minimum of four consecutive WET tests, all of which must be valid tests and must demonstrate compliance with the permitted limits for whole effluent toxicity, the permittee may submit a written request to the EPA seeking a review of the toxicity test results.

The EPA will review the test results and other pertinent information to make a determination. The frequency of toxicity testing may be reduced to as little as once per year. The permittee is required to continue testing at the frequency specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions. This special condition does not negate the permittee's right to request a permit modification at any time prior to the permit expiration.

The permittee is required in the draft permit to use the receiving water as a control. If toxicity tests using the receiving water as the control are or would be invalid because the receiving water shows toxicity, the EPA allows the use of

alternate dilution water. The draft permit requires three controls when alternate dilution water is used: 1) alternate dilution water (if culture water is not used as a diluent), 2) lab water control, and 3) site water control for future tests. The alternate dilution water will need to match the characteristics of the Contoocook River and it must be of a known quality with water-quality characteristic such as organic carbon, total suspended solids, pH, specific conductivity, alkalinity, and hardness similar to that of the Contoocook River. If the alternate dilution water is a lab water that does not require an adjustment to simulate the water chemistry of the receiving water, then two controls are required - the lab water and the site water. Prior to toxicity testing, it is recommended that the permittee screen the alternate dilution water for suitability.

This draft permit requires the reporting of selected parameters determined from the chemical analysis of the WET tests 100% effluent samples. Specifically, parameters for the constituents of ammonia nitrogen as nitrogen, hardness, and total recoverable cadmium, copper, chromium, lead, nickel, and zinc are to be reported on the appropriate Discharge Monitoring Reports for entry into the EPA's Integrated Compliance Information System (ICIS) Data Base. EPA New England does not consider reporting these requirements an unnecessary burden as the reporting of these constituents is required with the submission of each toxicity report (See Draft Permit, ATTACHMENT A, page A-8).

G. Essential Fish Habitat and Endangered Species.

Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)), EPA is required to consult with NMFS if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." See 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. See 16 U.S.C. § 1802(10). Adversely impact means any impact which reduces the quality and/or quantity of essential fish habitat (EFH). See 50 C.F.R. § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

Essential fish habitat is only designated for fish species for which federal Fisheries Management Plans exist. See 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

The Merrimack River and its tributaries, including the Contoocook River in the vicinity of Bennington, New Hampshire are designated essential fish habitat (EFH) for Atlantic salmon (*Salmo salar*). According to the New Hampshire Fish and Game Department (NHFGD), stocking of salmon fry in the Contoocook is limited to the reach between the towns of Hillsborough and Henniker. Bennington is approximately eight miles upstream from Hillsborough, and NHFGD currently has no plans to stock this stretch of the Contoocook.

Based on the permit limits and monitoring requirements identified in this fact sheet and permit that are designed to be protective of aquatic life, EPA has determined that a formal EFH consultation with National Marine Fisheries Service (NMFS) is not required because the proposed discharge is not likely to adversely affect Atlantic salmon EFH. If adverse effects to EFH do occur as a result of this permit action, or if new information becomes available that changes the basis for this determination, then NMFS will be notified and consultation will be promptly initiated.

Endangered Species

The Endangered Species Act (16 USC 1451 et seq) requires the EPA to ensure that any action authorized by the EPA is not likely to jeopardize the continue existence of any endangered or threaten species or adversely affect its critical habitat. Further, 40 CFR 122.49(c) requires the EPA to consult with the U.S. Fish and Wildlife Service (USFWS) and/or NMFS, as appropriate, to determine particular permit conditions when the regulations of the Endangered Species Act may apply.

Previous consultations with the USFWS have indicated there are no endangered species presently know to reside in the area of the Contoocook River where the Monadnock Paper Mills discharges.

H. Outfall 002

Each year Monadnock Paper Mills rehabilitates two groundwater wells. These wells supply the water used in the Mills' paper making processes. The rehabilitation, also referred to as redevelopment, includes three chemical treatments. The first treatment is a chemical mixture of muriatic acid (HCL water mixture) and QC-21 (an acidic Layne Christensen priority solution). This mixture is used to break down well screen clogging mineral deposits. The mixture is injected into the well where the solution is allowed to mix with the well clogging mineral deposits for 6 to 12-hours. It is then mechanically surged and backwashed into and out of the well screen for 4-hours. Next, the solution is pumped into a sedimentation/neutralization tank where hydrated lime or light soda ash is added to neutralize any remaining acid. The treated

solution is then released to the ground.

The second treatment, which is optional, injects sodium hexametaphosphate into the well. Sodium hexametaphosphate is a sequestering agent, which facilitates the removal of fine sands, silt and clay from the aquifer formation adjacent to the well screen. Additionally, chlorine is added to the treatment solution to inhibit biological growth in the well. The solution is pumped to the previously mentioned sedimentation/neutralization tank. Sodium hexametaphosphate does not require any special neutralization, however, any residual chlorine is neutralized with sodium metabisulfite. After treatment, the treated solution is released to the ground. The final treatment consists of injecting sodium or calcium hypochlorite into the well. The solution is allowed to react in the well for 6 to 12-hours. It is then mechanically surged and backwashed into and out of the well screen for 4-hours. The solution is then pumped into the sedimentation/neutralization tank where residual chlorine is neutralized with sodium metabisulfite. The solution is released to the ground.

Based on the volumes involved and the location of where the sedimentation/neutralization tank contents are emptied there is a potential for a portion of the treated wastewater to flow into the Contoocook River. In previous years, Monadnock Paper Mills, in order to discharge the treated solutions used for well redevelopment, was issued an EPA-New England NPDES permit exclusion for this discharger. A NHDES Temporary Surface Water Discharge Permit regulated the redevelopments solutions' discharge. In 2005 the EPA and NHDES issued a Remediation General Permit (RGP)which eliminated the need for "exclusions" and/or temporary discharge permits for the most common surface water discharges found at contaminated groundwater remediation sites, contaminated construction dewatering and discharges that contain petroleum products, solvents and metals. The RGP was intended to be used at remediation sites.

Since Monadnock's well redevelopment is not at a contaminated or formerly contaminated site, Monadnock cannot apply for the RGP. Monadnock's well development discharges now require an individual NPDES permit, because the EPA New England Region no longer issues "exclusion" letters for ground water discharges.

Monadnock's well redevelopment involves cleaning and de-scaling the well with acid solutions; injecting a biocide into the well; treating the solutions used to redevelop the well; and discharging the treated wastewater on the ground. Limits and monitoring requirements have been added to the draft permit to ensure these processes present no potential to pollute. The following limits and monitoring requirements for Outfall 002 are

added to the draft permit:

- pH limit – To determine whether the acid solutions are neutralized sufficiently to meet State water quality standards for pH.

- Total Suspended Solids (TSS) – To determine whether material or deposits extracted from the well have been sufficiently precipitated out of the treated wastewater. The TSS limit of 50 mg/l is based on the RGP TSS limit for construction site dewatering. The RGP limits the concentration of suspended solids in the water being pumped from construction sites at 50 mg/l. EPA and NHDES consider well redevelopment analogous to dewatering at a construction site. The solutions injected into a well during the well redevelopment process entrain solids (scale removed from the well's structure and silt). Accordingly, EPA and NHDES have adopted the 50 mg/l TSS limit for the treated solutions employed during well redevelopment at Monadnock Paper Mills.

- Total Phosphorous – Monitored to determine what concentration level of phosphorous is contained in the treated wastewater. Phosphorous is a component of some of the well cleaning solutions.

- Total Residual Chlorine - Monitored to determine that the dechlorination treatment is complete. Chlorine is a component of some of the well cleaning solutions and is injected into the well as a biocide.

- Turbidity – Monitored to determine the relative cloudiness of the wastewater discharge as compared to the Contoocook River.

Additionally, the draft permit will require the well redevelopment wastewater not be discharged during periods of wet weather or when the ground is frozen. The draft permit will also require Monadnock Paper Mills to prevent any erosion of the Contoocook River's banks from the well redevelopment wastewater discharge. As a check that no erosion of the river bank has occurred, Monadnock Paper Mills will be required to photograph all possible point of discharge to the Contoocook River before and after any discharge from Outfall 002.

I. Additional Requirements and Conditions

The effluent monitoring requirements have been established to yield data representative of the discharge under the authority of

Section 308(a) of the CWA in accordance with 40 C.F.R. §122.41(j), 122.44(i) and 122.48. The remaining conditions of the permit are based on the NPDES regulations 40 C.F.R. Parts 122 through 125 and consist primarily of management requirements common to all permits. A comparison of the existing permits and the draft permit sampling conditions is shown in the following table; with any changes highlighted:

Outfall 001 Effluent Monitoring Comparison

Parameter	Sampling Frequency	Sample Type	Sampling Frequency	Sample Type
Flow	Continuous	Recorder	Continuous	Recorder
pH	1/Day	Grab	1/Day	Grab
BOD_5	1/Week	Grab	1/Week	Grab
TSS	1/Week	Grab	1/Week	Grab
Total Recoverable	2/Month	Grab	2/Month	Grab
Total Phosphorous			**2/Month**	**Grab**
WET	2/Year	Grab	2/Year	Grab

Outfall 002 Effluent Monitoring Comparison

Parameter	**Sampling Frequency**	**Sample Type**	**Sampling Frequency**	**Sample Type**
Flow			**As Required**	**Estimate**
pH			**1/Discharge**	**Grab**

TSS			**1/Discharge**	**Grab**
Turbidity			**1/Discharge**	**Grab**
Total Phosphorous			**1/Discharge**	**Grab**
Total Residue Chlorine			**1/Discharge**	**Grab**

V. Antidegradation

This draft permit is being reissued with an allowable wasteload identical to the existing permit with the same parameter coverage and no change in location of the outfalls. EPA expects the State of New Hampshire, during the review of this draft permit as part of the State Certification process, to determine that there will be no lowering of water quality and no loss of existing water uses and that no additional antidegradation review is warranted.

VI. State Certification Requirements.

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations and/or conditions contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate NH Standards or waives its right to certify as set forth in 40 C.F.R. § 124.53.

Upon public noticing of the draft permit, EPA is formally requesting that the State's certifying authority make a written determination concerning certification. The State will be deemed to have waived its right to certify unless certification is received within 60 days of receipt of this request.

The NHDES-WD is the certifying authority. EPA has discussed this draft permit with the Staff of the Wastewater Engineering Bureau and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 C.F.R. §§ 124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the Clean Water Act Sections 208(e), 301, 302, 303, 306 and 307 and

with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition. These less stringent conditions may be established by EPA during the permit issuance process based on information received following the public noticing. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. The only exception to this is the sludge conditions/requirements implementing Section 405(d) of the CWA are not subject to the Section 401 State Certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through the applicable procedures of 40 C.F.R. Part 124.

It should be noted that under CWA § 401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by state law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 C.F.R. §124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." Id. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 C.F.R. § 122.4 (d) and 40 C.F.R. § 122.44(d).

VII. Comment Period, Hearing Requests, and Procedures for Final Decisions.

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period to:

Mr. John Paul King, Environmental Scientist
U.S. Environmental Protection Agency
1 Congress Street
Suite 1100 (Mailcode CPE)
Boston, Massachusetts 02114-2023

Telephone: (617) 918-1295
FAX No.: (617) 918-1505

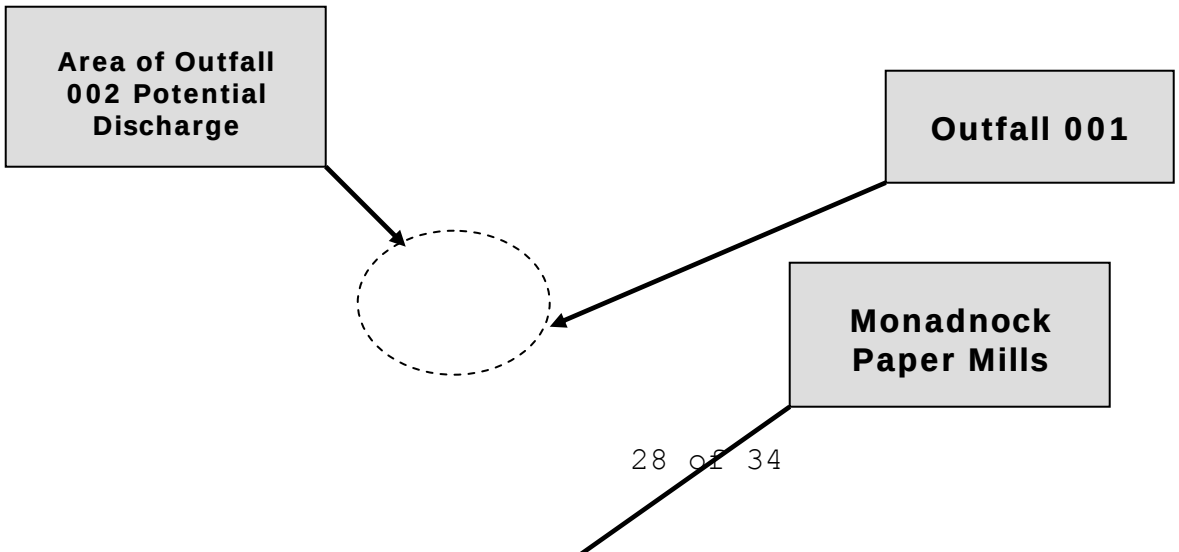
Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA-New England and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Director finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA New England's Boston office.

Following the close of the comment period, and after a public hearing, if such hearing is held, the Director will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

_____ **Stephen S. Perkins, Director**
Date **Office of Ecosystem Protection**
U.S. Environmental Protection Agency

ATTACHMENT A

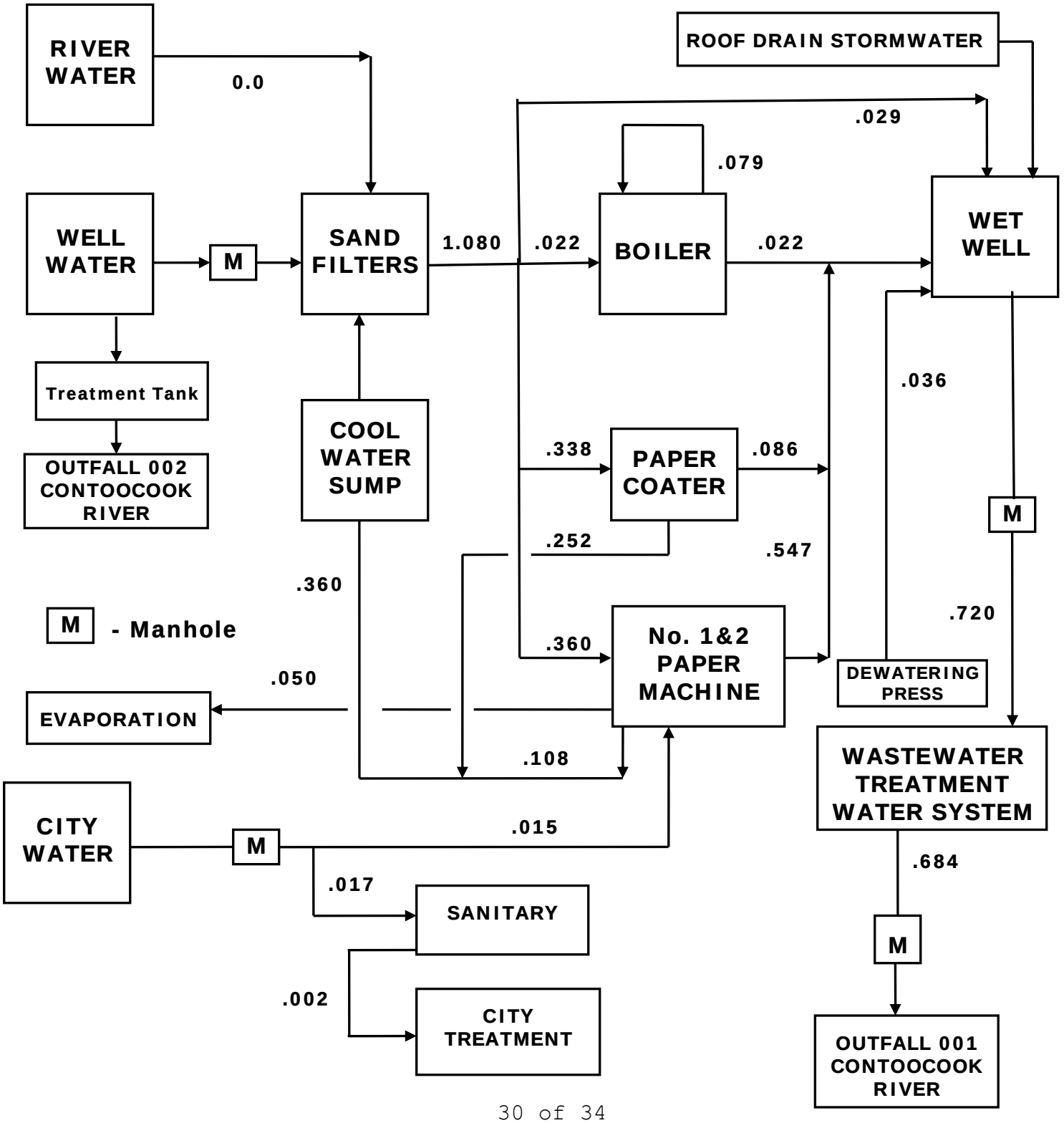
Location Monadnock Paper Mills and Outfall 001



ATTACHMENT B

Monadnock Paper Mills Process Water and Wastewater Flow

Note: Typical operating day water flow (in MGD) with one grader change per paper machine. Diagram taken from drawing prepared in 1998 by Monadnock Paper Mills.



ATTACHMENT C

TABLE I

EFFLUENT CHARACTERISTICS AT OUTFALL 001

The following effluent characteristics were derived from analysis of discharge monitoring data collected from Outfall 001 during the 61-month period, January 2001 through February 2006. This data was extracted from the monthly Discharge Monitoring Reports submitted by Monadnock Paper Mills. These effluent values characterize the process wastewaters discharged from this facility.

Effluent Characteristic	Average of Average Monthly	Maximum of Maximum Daily[1]
Flow (MGD)	0.489	0.84, 0.81, 0.79
pH (Standard Units)		6.5 to 8.0[2]
TSS, Winter (lbs/day)	148.9	651, 569, 291
TSS, Summer (lbs/day)	78.5	277, 250, 210
BOD_5, Winter (lbs/day)	131.2	460, 406, 335
BOD_5, Summer (lbs/day)	72.8	263, 250, 221
Aluminum (mg/l)	0.29	1.07, 1.01, 0.74

1. More than one number represents the second and third highest values, except for pH.

2. Numbers listed are minimum and maximum daily readings.

ATTACHMENT C (con't)

TABLE II

WHOLE EFFLUENT TOXICITY TESTING

Effluent Test	Minimums of Maximum Test Result		
LC50[1] (Per Cent Effluent)			
Ceriodaphnia dubia	100	100	100
Pimephales promelas	100	100	100
C-NOEC[2] (Per Cent Effluent)			
Ceriodaphnia dubia	100	100	100
Pimephales promelas	25	100	100

1. This test involves preparing a series of effluent concentrations by diluting the effluent with control water. Groups of test organisms, i.e. Ceriodaphnia dubia and Pimephales promelas, are exposed to each effluent concentration and a control for a specific period. The mortality data for each concentration can be used to calculate (by regression) the medium lethal concentration or LC-50. LC-50 is defined as the concentration which kills half the test organisms. Samples with a high LC-50 value are less likely to impact an organism's survival.

2. This test measures the sublethal effects by exposing test organisms to effluent samples during a sensitive period in their life cycle. Chronic minnow (Pimephales promelas) tests measure growth (weight) and survival during the seven-day test; chronic daphnid (Ceriodaphnia dubia) tests measure juvenile production and survival. Using Analysis of Variance techniques to evaluate data, it is possible to determine the highest concentration of effluent where no effect (C-NOEC) was observed.

ATTACHMENT D

AVAILABLE DILUTION FACTOR

Equation used to calculate available dilution factor at Outfall 001.

$$\text{Dilution Factor} = \frac{Q_{001}}{(Q_{PDF} \times 1.547)} \times 0.9$$

Dilution Factor = 9.6

Where:

Q_{001} - Equivalent 7Q10 flow at Outfall 001, in CFS. Q_{001} = 16.5 CFS

Q_{PDF} - Monadnock Paper Mill's permitted process wastewater flow, in MGD.

Q_{PDF} = 1.0 MGD; Chronic Limit, based on monthly average flow

Q_{PDF} = 1.3 MGD; Acute Limit; based on daily maximum flow

1.547 - Conversion Factor; MGD to cfs

0.9 - 10% reserve of river's assimilative capacity.

WATER QUALITY CRITERIA BASED LIMIT

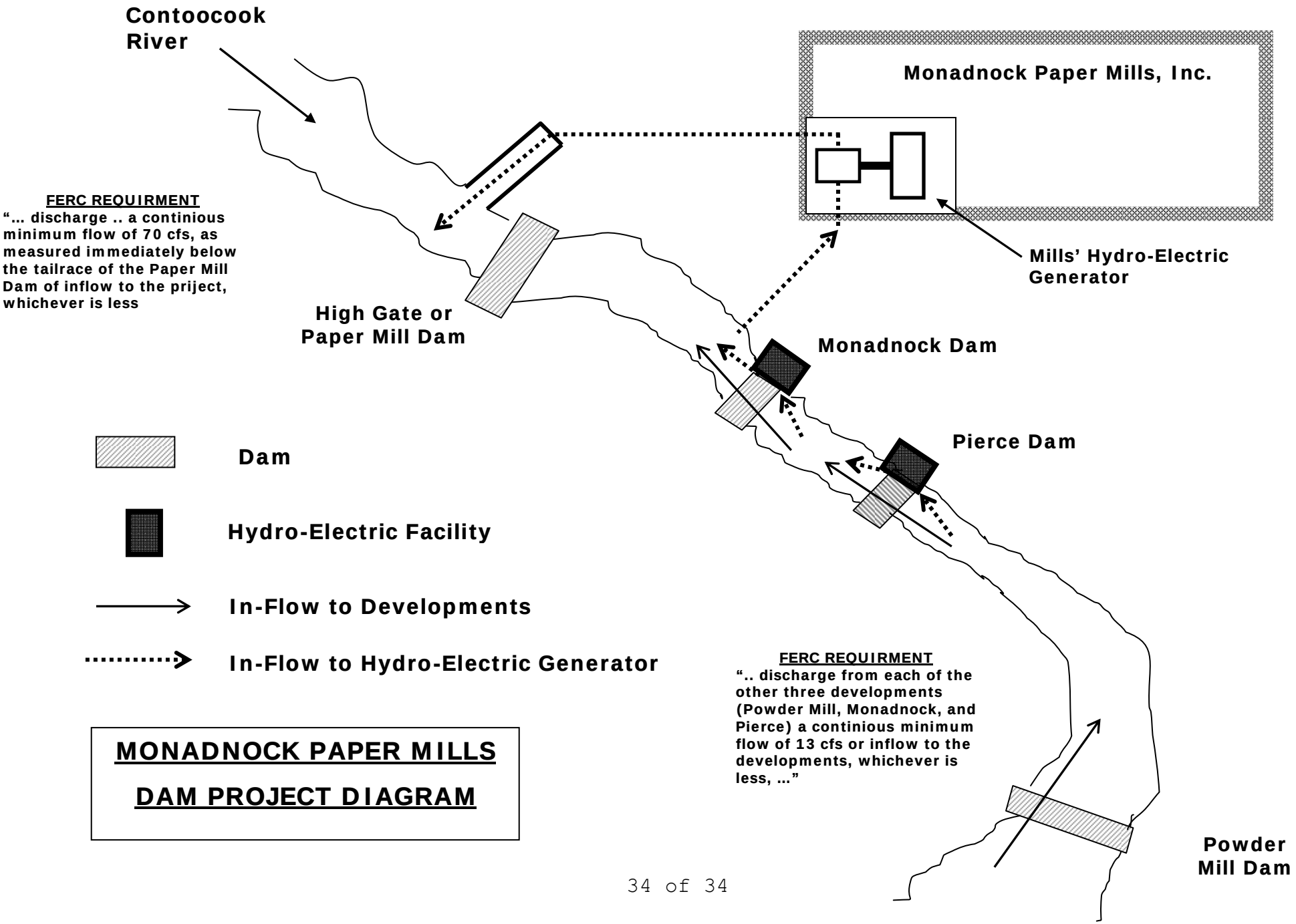
Equation used to calculate acute and chronic Total Recoverable Aluminum (TRA) limits.

TRA = Dilution Factor x Water Quality Criteria

Where:

Water Quality Criteria for TRA:

0.087 mg/l; Chronic Criterion to Protect Aquatic Life
0.75 mg/l; Acute Criteria to Protect Aquatic Life.



MONADNOCK PAPER MILLS

DAM PROJECT DIAGRAM